Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 16. This sheet replaces the original sheet including Figure 16.

Attachment: Replacement Sheet

REMARKS

This Amendment is filed in response to a non-final Office Action mailed on May 6, 2008. Claims 11-20 are pending. In the Office Action claims 1-9 stand rejected under 35 U.S.C. § 103(a), claims 6 and 7 stand rejected under 35 U.S.C. §112, second paragraph, and claims 8 and 10 stand objected to for minor informalities. As a preliminary matter, Applicant points to the previously-filed Preliminary Amendment, dated April 15, 2005. In that filing, Applicant cancelled claims 1-10 and entered new claims 11-20 (which corresponded to previously-cancelled claims 1-10 respectively.) However, the Examiner's first Office Action refers to claims 1-10, not 11-20. After reviewing the claims and the rejections, the Applicant presumes at this point that the Examiner, when referring to any of claims 1 thru 10, in fact intended to refer to the related claim 11-20, where the two sets of claims are 10 digits apart, e.g. rejections of claim 1 are intended to be rejections of claim 11 (1+10=11.) In response, Applicant has amended claims 16 and 18 (corresponding to previously cancelled claims 6 and 8 respectively.) The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing.

In the Office Action, Figure 16 is objected to because it lacks the designation of "Prior Art." In response, Applicant submits herewith a corrected version of Figure 16.

In the Office Action, claims 18 and 20 (corresponding to previously cancelled claims 8 and 10 respectively) are objected to for minor informalities related to grammar. Applicant has amended the claim 18 to correct the informalities, as suggested by the Examiner. As to claim 20, Applicant asserts that "generating an input signal" is grammatically correct, because it is consistent with the verb structure within the rest of the claim, and with the verb structure in claim 19 from which it depends, all of which use the –ing suffix. No other rejections were cited with regard to claim 20, and the Applicant respectfully requests allowance of that claim in view of the discussions above.

In the Office action, claims 16 and 17 (corresponding to previously cancelled claims 6 and 7 respectively) are rejected under §112 second paragraph as indefinite. The Examiner asserts that the phrase in claim 16 "wherein the luminance sensor detects an output voltage into which an off current due to light excitation corresponding to luminance of light emitted from the backlight is converted in a state that the thin film device that composes the luminance sensor is

sufficiently turned off" is unclear. Claim 17 is rejected based on its dependency from claim 16. In response, Applicant has amended claim 16 to clarify that which the Applicant considers to be the claimed invention. Support for the amendment can be found in the specification at least at paragraphs [0054]-[0056], and Figure 8.

In the Office Action, claims 11, 14, 15 and 19 (corresponding to previously cancelled claims 1, 4, 5 and 9 respectively) are rejected under §103(a) as being unpatentable over U.S. 2003/0137485 ("*Wei*") in view of U.S. Patent 6,914,389 ("*Chang*"). Independent claim 11 requires a liquid crystal display apparatus with a liquid crystal interposed between a first and second substrate and a backlight as a light source, the apparatus comprising a luminance sensor and a thin film device as pixels being formed on the first substrate in a same process, and a control circuit. The luminance sensor detects the luminance of the backlight. The control circuit generates a drive signal to maintain that luminance of the backlight almost constant based on a detection signal provided by the luminance sensor. In response to the rejection, Applicant respectfully traverses because the references are not properly combinable and, even if combinable the references do not teach or suggest the alleged combination.

Wei describes a thin film transistor (TFT) liquid crystal display that can adjust its light source in response to ambient light levels. The TFT **34** is a luminance detector that detects a ambient light source and helps to modulate the LCD light source. TFT **34** is connected to a light source adjusting circuit **30** and a feedback circuit **36**, shown as a block diagram in Figure 2 and as a circuit diagram in Figure 3. When ambient light enters a first substrate layer **62**, it interacts with the amorphous silicon layer **60** of the photo sensor TFT **34,** generating a current to the feedback circuit **36,** which modulates the light source to optimal brightness levels. In response to an increase in ambient light, TFT **34** would send a signal to the light source adjusting circuit **30** which will enhance, weaken, open or close the light source of the device. Again, note that *Wei* does not describe the detection of LCD light source.

Chang, in comparison, teaches a direct-type backlight module with a plurality photo sensors that adjusts the relative intensity of the plurality of lamps that make up the backlight. *Chang* has photo sensors **28A to 28D**, and light sources **20A to 20 D,** and the comparative and arithmetic unit **50**. Each photo sensor A through D is aligned respectively with each light source A through D such that a measurement of the intensity of each light source by its respective each

photo sensor can be compared in **50**. **50** then adjusts the relative intensity the lamps **20A to 20D** in order to prevent an uneven luminous intensity of the light on the display panel.

First, the two references are not properly combinable. Neither of the two possible TFTs described in *Wei*, neither **82** nor **34**, is easily combinable with the photo sensor in *Chang*. Combining *Chang*'s photo sensor with TFT **34** is problematic. **34** senses ambient light and controls the backlight based on ambient light. *Chang*'s photo sensor senses the backlight only. Also, **34** is positioned on the periphery of the device. [0025] In contrast each photo sensor in *Chang* must be positioned relative to the light source it measures. That position can be vertically through the device, and can be positioned to detect average illuminations between light sources. See Figs. 3-4, and 6-9; also Col. 3 ln. 62 to col. 4, ln 30. Positioning the photo sensors in *Chang* at the periphery as taught by *Wei* is not taught by *Chang* and would lead to poor determination of light source intensities. TFT **82** in *Wei* is also not combinable with *Chang*. TFT **82** controls each pixel **80** of substrate **64** and is part of the pixel array matrix **78**. *Wei* teaches that TFT **82** is part of the active region I of substrate **64.** That TFT is responsible for driving the liquid crystal display not for measuring backlight intensity.

Even if combination of *Chang* and *Wei* is proper, the combination of these two references fails to teach the claimed invention. First, the claimed invention and the two disclosures each contain a different controller. The claimed invention requires a control circuit to generate a drive signal to maintain the luminance of the backlight almost constant. A review of the specification makes clear that this focuses on maintaining a set luminance. At [0011], "a control circuit that ... keeps the luminance of the backlight almost constant on the basis of a detection signal detected by the luminance sensor" indicates that maintaining a constant luminance is the goal. In addition, an advantage of the claimed invention is to "keep the luminance of the backlight constant even if aged deterioration takes place in the apparatus. [0018]. In contrast, neither *Wei* nor *Chang* attempts to maintain the luminance of the backlight. *Chang*'s stated goal is to "prevent uneven luminous intensity of the light" by adjusting each light source based on measurements from each light source's respective photo sensor. Col. 2 ln. 3-6; col. 4 ln. 32-42. In other words, each independent light source is varied one against the other to create an even luminance, not to maintain the luminance. The name of the controller in *Chang*, "comparative and additive unit" further supports that disclosure, as this unit compares the relative intensities in

each light source as measured by its photo sensor, and adjusts them appropriately. See col. 4 ln. 15-20. Similarly, *Wei* uses the photo sensor to determine whether to enhance, weaken, open or close the light source. [0013] That adjustment could be in response to an increased brightness in the room, requiring more backlighting to the viewing screen, or a deceased ambient light in the room, leading to a reduction in backlighting. Neither of these focuses on maintaining a backlight intensity almost constant, as required by the claims.

Moreover, the description in *Wei* in fact teaches away from the claimed invention. *Wei* teaches that TFT **82** should be shielded by a black filter array in order to prevent it from generating a photocurrent. This photocurrent that *Wei* discourages is the same photocurrent that is sent to the comparative and additive unit in *Chang*, which then varies the current sent to the backlight modules. Even if one of ordinary skill were motivated to select and combine the elements as suggested by the Examiner, *Wei* in fact teaches away from that selection by indicating that TFT **82** should be shielded to prevent a response to light.

In the Office Action, claims 14 and 15 (corresponding to previously cancelled claims 4 and 5 respectively) are rejected in view of *Chang* and *Wei* as discussed above. Applicant respectfully traverses this rejection for the reasons set forth above. Moreover, with regard to the limitation in claim 15 of "a housing that houses the first substrate, the second substrate, the backlight, and the control circuit and that covers the luminance sensor", the Examiner asserts that *Chang*, Fig. 1 item 14, meets this limitation. Regardless of whether the substrates are housed in the housing (Fig. 1, item 14 seems limited to lamps 20, metal reflecting sheet 18, and diffuser 16 which would not meet the claim limitations) the claim requires that the housing "cover the luminance sensors". The luminance sensors in Fig. 1 and through out *Chang*, are not covered by the housing, but instead set within the middle of the screen. Therefore they cannot be covered by the housing.

In the Office Action, claim 19 (corresponding to cancelled claim 9) is rejected in view of *Chang* and *Wei*. The method in claim 19 was viewed as inherent in the operation of claim 11 and is concurrently rejected. Applicant respectfully traverses this rejection. Claim 19 requires a backlight as a light source with white light derived from a mixture of at least three color emitting devices. Neither *Chang* nor *Wei* supply this limitation. Furthermore, the method clearly states detecting luminance by luminance sensors, generating a drive signal based on detection of

luminance, and driving at least three color-emitting devices with the drive signal generated to maintain the luminance of the backlight almost constant. As discussed above, neither *Chang* nor *Wei* disclose a controller that maintains the luminance of the backlight nearly constant. Therefore neither *Chang* nor *Wei* can disclose this method.

In the Office Action, claims 12, 13, and 18 (corresponding to previously cancelled claims 2, 3, and 8 respectively) are rejected under §103(a) as being unpatentable over *Wei* in view of *Chang*, and further in view of U.S. Patent 6,791,636 ("*Paolini*.") *Paolini* is relied upon to supply the limitations of a LED array and a diffusing portion, where the LED array is a repetition of at least three colors and the diffusing portion diffuses the color rays and generates white light. Applicant respectfully traverses this rejection. First, *Paolini* fails to cure the problems associated with combining *Chang* and *Wei* as described above. Second, even if *Chang* and *Wei* were combinable, *Paolini* is not combinable with them. For example, *Chang* detects luminance from individual light sources using individual photo sensors. The intensity of those individual light sources are then adjusted to create a uniform backlight intensity. But in *Paolini*, all the individual LEDs in the array are diffused to make a uniform white light. So, the measurement of intensities of individual light sources is not possible. Therefore the combination fails. Similarly, *Wei* measures ambient light and increases or decreases the intensity of the backlight source accordingly. Again, this does not make obvious the claimed invention because it does not address maintaining the luminance of the backlight source.

As the Examiner has cited, *Paolini* does disclose an issue that the claimed invention solves. Specifically, in discussing white light and the relative efficiencies of the red, green and blue LEDs, *Paolini* notes that the efficiencies may change over time, so dynamic adjustment can be made to the energizing signals to compensate for any change in brightness. Col. 5, ln. 32-38. However, as noted in the Applicant's specification, the luminance can be adjusted by the end user or by a producer prior to shipping. [0006] With age deterioration, the user would need to adjust this. *Paolini*, in this disclosure, recognizes that issue as well. However, *Paolini* does not disclose how to achieve that adjustment and nothing in *Paolini*, *Chang*, or *Wei* teach how to maintain the luminance nearly constant. The claimed invention teaches a new display apparatus that has a luminance sensor and controller that maintains the luminance almost constant without the need for the user to adjust it manually.

For the reasons set forth above, Applicant asserts that the claimed invention is non-obvious over the combination of *Chang* and *Wei* or the combination of *Paolini*, *Chang* and *Wei*, and that the other claim objections have been resolved. Applicant respectfully asserts that the claims are in condition for allowance, and earnestly solicit reconsideration of same.

Respectfully submitted,

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